Donaghmore GWB: Summary of Initial Characterisation.

Hydrometric Area Local Authority	Associated surface water bodies	Associated terrestrial ecosystems	Area (km^2)
15 – Nore Laois Co Co N Tipperary Co Co	Donaghmore Stream	None	47

Topography		This groundwater body lies at the northwestern edge of the Nore River basin. Elevations are highest to the east along the catchment divide; there are no distinct hills here but the elevation is around 130m OD. To the east this elevation reduces gradually to 100m OD. The surface drainage direction is to the southeast.
Geology and Aquifers	Aquifer type(s)	**Lm**: Locally Important Aquifer, generally moderately productive
	Main aquifer lithologies	BAld : Lisduff Oolite Member - Oolitic Limestone Typically these rocks comprise thick bedded, pale blue-grey, cross-bedded, well-jointed oolite of variable thickness
	Key structures.	Faults cross the groundwater body in a NNW – SSE direction, juxtaposing the shaly limestones against the pure limestones of the Lisduff Oolite. There is a small anticline about 1km north of the village of Donaghmore: well yields may be enhanced along this feature.
	Key properties	Typical well yields are from 100 to 200m^3/d and specific capacity is typically 5 – 10 m^3/d/m. (Daly 1994) There is no information available regarding the transmissivity of the Lisduff Oolite.
	Thickness	The thickness of the Oolite strata can be from 0 to 100m although the effective hydraulic thickness is probably not greater than 20m.
Overlying Strata	Lithologies	The majority of this area is overlain by limestone-derived glacial till, which is of moderate permeability. There are some local patches of tills dominated by gravels, and some peat deposits at the highest elevations to the west.
	Thickness	Thickness is generally less than 5m but there are some localities where there is rock close to surface and also some areas where there is more than 10m of overlying subsoil.
	% area aquifer near surface	There is a low percentage of aquifer near the surface.
	Vulnerability	Vulnerability is variable in this area. There are small areas of Extreme and also Low vulnerability contained within an overall Moderate vulnerability.
Recharge	Main recharge mechanisms	Most recharge is likely to occur where the overlying subsoil permeability is highest or where the thickness is lowest. The most permeable subsoils are to the east of the body and the thinnest subsoils are to the north and south extremities of the body.
	Est. recharge rates	*[Recharge estimated will be given at a later date]*
Discharge	Springs and large known abstractions	Ballacolla GWS (Castletown spring (80)), Errill GWS (725), Cullahill GWS (275)
	Main discharge mechanisms	There are no karst features recorded in the area of this groundwater body. It is therefore likely that discharge from the aquifer is to overlying surface water bodies, especially to the east where the subsoil is most permeable. If the watertable reflects the topographic gradient then this also suggests groundwater will flow to the southeast.
	Hydrochemical Signature	The hydrochemical signature of the water from the Lisduff Oolite is typical of limestone water, which is "hard to very hard" water with a calcium – bicarbonate signature. The strata of this aquifer are **Calcareous**.
Groundwater Flow Paths		This groundwater body is considered to be a locally important aquifer. The majority of groundwater flow may be centered on the structural features where any karstification that might have occurred will be most developed.
Groundwater and surface water interactions		The hydrograph at Errill shows that the water table is close to the surface and therefore fluctuating river levels in areas close to streams probably control groundwater levels to some extent. The interactions between surface water and groundwater are probably more intense to the east where there are more permeable subsoils.
Conceptual model		The extent of this groundwater body is defined to the east by the boundary between the Nore Basin and the Suir and otherwise by the extent of the Lisduff Oolite. Most recharge is likely to occur in the northwest where elevations are highest and subsoil thickness is lower. Groundwater will flow from the northwest to the southeast where it will contribute baseflow to the local streams. The borehole hydrograph from the public supply at Errill shows that groundwater is close to the surface and that there is an annual fluctuation of about 1m.

Attachments	Well Hydrograph at GSI Borehole LS 27/1
Instrumentation	Stream gauge: 15029 GSI Borehole Hydrograph: Errill - LS 27/1 EPA Representative Monitoring boreholes: None

Information Sources	Daly E.P. (1994) Groundwater Resources of the Nore River Basin. Geological Survey of Ireland. Hunter-Williams, N, Motherway, K, & Wright, G.R. (2002) North Tipperary Groundwater Protection Scheme Hunter-Williams, N, Motherway, K, & Wright, G.R. (2002) Templemore Water Supply Scheme – Groundwater Source Protection Zones.
Disclaimer	Note that all calculation and interpretations presented in this report represent estimations based on the information sources described above and established hydrogeological formulae

Well Hydrograph at GSI Station LS 27/1